

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| In re: Davis et al. | Confirmation No.: 8316 |
| Serial No.: 10/608,268 | Group Art Unit: 2153 |
| Filed: June 27, 2003 | Examiner: Brendan Y. Higa |
| For: METHODS, SYSTEMS AND PROGRAM PRODUCTS FOR DELIVERY OF WEB SERVICES USING CATEGORICAL CONTRACTS | |

Date: January 2, 2008

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P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 41.37

Sir:

This Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences" electronically transmitted on October 1, 2007.

Real Party In Interest

The real party in interest is assignee International Business Machines Corporation, Armonk, New York.

Related Appeals and Interferences

Appellants are not aware of any appeals or interferences that would be affected by the present appeal.

Status of Claims

Claims 1-23 remain pending as of the filing date of this Brief, and stand finally rejected. Appellants appeal the final rejection of Claims 1-23 in the final office action mailed August 2, 2007 (hereinafter "Final Action"). The attached Appendix A presents the claims at issue as amended by Appellants' Amendment filed May 29, 2007, which has been entered.

Status of Amendments

The Amendment filed May 29, 2007 has been entered.

Summary of the Claimed Subject Matter

Some embodiments of the present invention according to independent Claim 1 provide methods of providing web services. An electronic record of a contract (see, *e.g.*, FIG. 2, items 214) for a service provider (see, *e.g.*, FIG. 2, items S1, S2, . . . Sj, Sk, Sk1, Sk2, . . . , Skm) to provide web services meeting a web service category definition is created at a web services hub (see, *e.g.*, FIG. 2, item 210) of a service domain. A web service is provided to a service requestor (see, *e.g.*, FIG. 2, items SR1, SR2) from the service domain responsive to the electronic record of the contract. *See, e.g.*, Specification, p. 6, line 30 through p. 7, line 15.

According to Claim 3, which depends from Claim 1, providing the service to the service requestor comprises providing the service to the service requestor without requiring creation of a contract for the use of a specific service instance. *See, e.g.*, Specification, p. 7, lines 8-15.

According to Claim 4, which also depends from Claim 1, providing a web service comprises identifying a plurality of ports operative to provide web services meeting the service category definition at the web service hub and providing the web service to the service requestor responsive to identification of the ports. *See, e.g.*, Specification, p. 7 line 31 through p. 8, line 4.

According to Claim 5, which depends from Claim 4, identifying a plurality of ports comprises polling at least one web services node subordinate to the web services hub to identify at least one service provided by the node and updating a description of a service category responsive to the polling. *See, e.g.*, Specification, p. 7 line 31 through p. 8, line 4.

According to Claim 7, which depends from Claim 5, polling at least one web services node comprises polling a plurality of levels of web services nodes using a coordinated polling interval scheme. *See, e.g.*, FIG. 3; Specification, p. 7, lines 16-30.

According to Claim 8, which depends from Claim 7, polling a plurality of levels of web services nodes using a coordinated polling interval scheme comprises using staggered polling intervals for adjacent levels of the web services domain. *See, e.g.*, FIG. 3; Specification, p. 7, lines 16-30.

According to Claim 9, which depends from Claim 1, creating an electronic record of a contract comprises creating an electronic record of a first contract. The method further

comprises creating an electronic record of a second contract (see, *e.g.*, FIG. 2, item 212) to provide web services that meet a service level criterion to the service requestor at the web services hub, and providing a web service to the service requestor comprises providing the web service to the service requestor via the web services hub responsive to the electronic records of the first and second contracts. *See, e.g.*, Specification, p. 7, lines 3-7.

According to Claim 10, which depends from Claim 9, providing a web service to the service requestor comprises dispatching a service request from the service requestor in the service domain based on the electronic records of the first and second contracts and a service policy of the web services hub. *See, e.g.*, FIG. 4; Specification, p. 8, line 12 through p. 9, line 33.

According to independent Claim 11, a computing system includes a web services hub (see, *e.g.*, FIG. 2, item 210) that creates an electronic record of a contract (see, *e.g.*, FIG. 2, items 214) for a service provider (see, *e.g.*, FIG. 2, items S1, S2, . . . Sj, Sk, Sk1, Sk2, . . . , Skm) to provide web services meeting a web service category definition and provides a web service to a service requestor from a service domain responsive to the electronic record of the contract. *See, e.g.*, Specification, p. 6, line 30 through p. 7, line 15.

According to Claim 12, which depends from Claim 11, the web service hub is operative to identify a plurality of ports operative to provide web services meeting the service category definition at the web service hub and to provide the web service to the service requestor responsive to identification of the ports. *See, e.g.*, Specification, p. 7 line 31 through p. 8, line 4.

According to Claim 13, which depends from Claim 12, the web service hub is operative to poll at least one web services node subordinate to the web services hub to identify at least one service provided by the node and to update a description of a service category responsive to the polling. *See, e.g.*, Specification, p. 7 line 31 through p. 8, line 4.

According to Claim 15, which depends from Claims 11 and 14, the system further comprises a web services domain comprising the web services hub and configured to poll a plurality of levels of web services nodes of the domain using a coordinated polling interval scheme. *See, e.g.*, FIG. 3; Specification, p. 7, lines 16-30.

According Claim 16, which depends from Claim 11, the electronic record of a contract comprises an electronic record of a first contract. The web services hub is further

operative to create an electronic record of a second contract to provide web services that meet a service level criterion to the service requestor at the web services hub and to provide the web service to the service requestor via the web services hub responsive to the electronic records of the first and second contracts. *See, e.g.*, Specification, p. 7, lines 3-7.

According to Claim 17, which depends from Claim 16, the web services hub is operative to process a service request from the service requestor at the web services hub based on the electronic records of the first and second contracts and a service policy of the web services hub. *See e.g.*, FIG. 4; Specification, p. 8, line 12 through p. 9, line 33.

Some embodiments of the present invention according to Claim 18 provide computer program products comprising computer program code embodied in computer-readable storage medium. The computer program code includes program code configured to create an electronic record of a contract for a service provider to provide web services meeting a web service category definition at a web services hub of a service domain and program code configured to provide a web service to a service requestor from the service domain responsive to the electronic record of the contract. *See, e.g.*, FIG. 2; Specification, p. 6, line 30 through p. 7, line 15.

According to Claim 19, which depends from Claim 18, the program code configured to provide a web service comprises program code configured to identify a plurality of ports operative to provide web services meeting the service category definition at the web service hub and program code configured to provide the web service to the service requestor responsive to identification of the ports. *See, e.g.*, Specification, p. 7 line 31 through p. 8, line 4.

According to Claim 20, which depends from Claim 19, the program code configured to identify a plurality of ports comprises program code configured to poll at least one web services node subordinate to the web services hub to identify at least one service provided by the node and program code configured to update a description of a service category responsive to the polling. *See, e.g.*, Specification, p. 7 line 31 through p. 8, line 4.

According to Claim 22, which depends from Claim 18, the program code configured to create an electronic record of a contract comprises program code configured to create an electronic record of a first contract. The computer program code further comprises program code configured to create an electronic record of a second contract to provide web services

that meet a service level criterion to the service requestor at the web services hub, and the program code configured to provide a web service to the service requestor comprises program code configured to provide the web service to the service requestor via the web services hub responsive to the electronic records of the first and second contracts. *See, e.g.*, Specification, p. 7, lines 3-7.

According to Claim 23, which depends from Claim 22, the program code configured to provide a web service to the service requestor comprises program code configured to dispatch a service request from the service requestor in the service domain based on the electronic records of the first and second contracts and a service policy of the web services hub. *See, e.g.*, FIG. 4; Specification, p. 8, line 12 through p. 9, line 33.

Grounds of Rejection to be Reviewed on Appeal

1. Are Claims 18-23 properly rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter (Final Action, p. 4.)?
2. Are Claims 1-4, 9-12, 16-19, 22 and 23 properly rejected under 35 U.S.C. §102(e) as being unpatentable over U.S. Patent Application Publication No. 2003/0061404 to Atwal et al. (hereinafter "Atwal") (Final Action, p. 5.)?
3. Are Claims 5-8, 13-15, 20 and 21 properly rejected under 35 U.S.C. §103(a) as being unpatentable over Atwal in view of U.S. Patent Application Publication No. 2005/0198188 to Hickman (hereinafter "Hickman") (Final Action, p. 9.)?

Argument

I. Introduction

Claims 18-23 stand rejected as allegedly being directed to nonstatutory subject matter. 35 U.S.C. § 101 provides:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

MPEP § 2106 IV.B states:

To properly determine whether a claimed invention complies with the statutory invention requirements of 35 U.S.C. 101, USPTO personnel must first identify whether the claim falls within at least one of the four enumerated categories of patentable subject matter.

In many instances it is clear within which of the enumerated categories a claimed invention falls. The scope of 35 U.S.C. 101 is the same regardless of the form or category of invention in which a particular claim is drafted. *AT&T*, 172 F.3d at 1357, 50 USPQ2d at 1451. . .

. . . The burden is on the USPTO to set forth a *prima facie* case of unpatentability. Therefore if USPTO personnel determine that it is more likely than not that the claimed subject matter falls outside all of the statutory categories, they must provide an explanation . . .

Claims 1-4, 9-12, 16-19, 22 and 23 stand rejected as allegedly anticipated. To anticipate a claim, the reference must teach every element of the claim. M.P.E.P. § 2131. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claims 5-8, 13-15, 20 and 21 stand rejected as allegedly obvious. To establish a *prima facie* case of obviousness under 35 U.S.C. § 103, the prior art reference or references, when combined, must teach or suggest all the recitations of the claims, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. M.P.E.P. §2143. As stated in the "Examination Guidelines for Determining Obviousness Under 35 U.S.C. §103 in view of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*" (M.P.E.P. §2141), a question regarding whether a claimed invention is obvious under 35 U.S.C. § 103 must include an analysis of the factors set forth in *Graham v. John Deere Co.* (383 U.S. 1, 148 USPQ 459 (1966)), which are described by the Supreme Court in the *KSR* decision to be 1) determining the scope and content of the prior art; 2) ascertaining the differences between the claimed invention and the prior art; and 3) resolving the level of ordinary skill in the pertinent art (hereinafter, the "*John Deere* factors"). The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the

claimed invention would have been obvious. M.P.E.P. § 2143. A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v. Teleflex Inc.*, 550 U. S. 1, 15 (2007). A Court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 13. When it is necessary for a Court to look at interrelated teachings of multiple patents, the Court must determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. *Id.* at 14.

II. Claims 18-23 recite statutory subject matter

Claims 18-23 stand rejected as allegedly directed to non-statutory subject matter. Final Action, p. 3. In particular, the Final Action asserts that "the specification provides evidence that applicant intends for the computer readable medium to include transport medium (i.e. electronic, magnetic, optical, electromagnetic, infrared signals) as well as paper medium which are non-statutory." Final Action, p. 3.

Respectfully, there is no basis for this apparent assertion that "transport medium . . . as well as paper" is *per se* non-statutory. MPEP § 2106.01 states:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." *In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component.* (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works, and a compilation or mere arrangement of data.

Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. *When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized.* Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994)(discussing patentable weight of data structure limitations in the context of a statutory claim to a data structure stored on a computer readable medium that increases computer efficiency) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held

statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). (Emphasis added).

Claims 18-23 are computer program product claims and recite a computer readable storage medium that comprises computer readable program code that imparts functionality. As long as the medium is "computer readable," the other features of the medium, e.g., whether it is readable by the computer using magnetic, optical or other means, is irrelevant. Therefore, Appellants submit that Claims 18-23 meet the definition of statutory subject matter set forth in MPEP § 2106.01. Accordingly, Appellants respectfully submit that the § 101 rejections of Claims 18-23 are erroneous and should be withdrawn.

III. Claims 1-4, 9-12, 16-19, 22 and 23 are patentable

A. Independent Claims 1, 11 and 18 are patentable

Independent Claims 1, 11 and 18 stand rejected as allegedly anticipated by Atwal.

Final Action, pp. 5-9. Independent Claim 1 recites:

A method of providing web services, the method comprising:
creating an electronic record of a contract for a service provider to provide web services meeting a ***web service category definition*** at a web services hub of a service domain; and
providing a web service to a service requestor from the service domain responsive to the electronic record of the contract.

Independent Claims 11 and 18 recite corresponding apparatus and computer program products. A "web service category" may be further understood by reference to exemplary embodiments of the present invention illustrated in FIG. 2:

FIG. 2 depicts an overview of an exemplary web services environment according to some embodiments of the present invention. Individual service instances S1, S2, . . . , Sj, . . . Sk (in individual domains D1, D2, D3 and a service domain SCx representing an aggregation of service instances SC1, SC2, . . . SCm) are aggregated into a main domain D, and represented at a service hub 210 by a list of aggregated service ports. The service hub 210 maintains adjustable usage contracts 212 that specify a service level to which service requestor SR1, SR2 are subscribed. On the service provider side, the service hub 210 maintains categorical contracts 214 for the "supplying" domain D to sign up to categories of service, but not specific services.

In some embodiments of the present invention, the service hub 210 may use a periodic polling mechanism to create an overall service view (e.g., database) of the main domain D based on categorical supplier contracts. Because of the categorical

nature of the provider contracts, the service view may change over time, as services are added or deleted. For example, a service requestor that requests a service under a "finance" service category can select a variety of services currently available under that category based on the current service view. There is no need to predefine all the services to the service hub 210 in its own repository, as might be done in the prior art.

Present Application, p. 6, line 30 through p. 7, line 15. In rejecting Claim 1, the Final Action asserts that Atwal teaches "creating an electronic record of a contract (modified WSDL) for a service provider to provide web services meeting a web service category definition," specifically citing a gateway module 500 shown in FIG. 5 and description of API contract processing by such a gateway that refers to FIG. 7A. Final Action, pp. 5 and 6.

As described in Atwal, the "gateway module 500 is an application that sits between client applications 15 and web services 25 being offered." Atwal, paragraph [0051]. As shown in FIG. 6A, such a gateway module may receive a method call for a *specific* web service, *i.e.*, not a web service *category*, and determines what network location to route the method call to based on network location information stored in a web service repository "that provides a mapping from the identity of the web service (URI) to the physical location of the web service." Atwal, paragraph [0053]. Referring to the cited paragraph [0070] of Atwal, FIG. 7A shows such a gateway module forwarding a call for an API contract, *e.g.*, an HTTP GET call that requests a representation of the specified resource (web service) being called. The gateway module receives the API contract (*e.g.*, a WSDL document describing the resource) and modifies the contract by "addition or modification of a parameter . . . such as a modification of an address." Atwal, paragraph [0070].

The gateway module 500 described in Atwal does not perform any function corresponding to the recited "creating an electronic record of a contract for a service provider to provide web services meeting a *web service category definition*" and "providing a web service to a service requestor from the service domain responsive to the electronic record of the contract." Rather, the gateway module 500 merely mediates method and API calls such that parameters in the call may be modified or added to in manner that is transparent to the consuming client. *See* Atwal, paragraph [0071]. The client described in Atwal is still calling a *specific* web service. The "modified WSDL" referred to in paragraph [0070] is not "a contract for a service provider to provide web services meeting a *web service category*

definition." Instead, it is a modified WSDL for a specific web service called by the client in which some call parameters have been added or amended.

In attempting to rebut these arguments, the Final Action cites paragraph [0007] of Atwal as allegedly teaching "a need in the art for providing a company with a way to combine a group or set of web services, from different 'categories' of web service providers," and identifies "Web Service 'A', 'B', 'C', 'D'" as such categories. Final Action, p. 3.

Paragraph [0007] of Atwal states:

[0007] Additionally, a company may wish to combine several web services 25 or parts of several web services 25 into an existing or new web service 25. It is time consuming for a developer to construct new web services 25 that call these other web services 25, and limiting in that the combinations are fixed at design time. There is no way to dynamically aggregate web services 25 based on a user's identity or some other criteria.

While expressing a problem, this does not disclose or suggest a solution involving "creating an electronic record of a contract for a service provider to provide web services meeting a web service category definition" and "providing a web service to a service requestor from the service domain responsive to the electronic record of the contract." "A," "B", "C" and "D" shown FIG. 17 are web service *providers*, not categories. *See* Atwal, paragraph [0016]. There appears to be no categorization based on these providers described in relation to FIG. 17, much less "creating an electronic record of a contract for a service provider to provide web services meeting a web service category definition" that corresponds to these providers.

Accordingly, Appellants submit that Atwal does not disclose or suggest the recitations of independent Claims 1, 11 and 18 and, for at least these reasons, Appellants submit that independent Claims 1, 11 and 18 are patentable and request that the rejections thereof be reversed.

B. Claims 2-4, 9, 10, 12, 16, 17, 19, 22 and 23 are patentable

Appellants submit that Claims 2-4, 9, 10, 12, 16, 17, 19, 22 and 23 are patentable at least by virtue of the patentability of the respective ones of independent Claims 1, 11 and 18 from which they depend. Appellants further submit that several of these claims are separately patentable for at least the reasons presented below.

C. Claim 3 is separately patentable

Claim 3, which stands rejected as allegedly anticipated by Atwal (see Final Action, p. 6), recites "wherein providing the service to the service requestor comprises providing the service to the service requestor without requiring creation of a contract for the use of a specific service instance." Contrary to the assertions of the Final Action on page 6, the gateway module actually creates a WSDL for a specific web service, e.g., the WSDL returned in response to the API call to the web service 25 has a one-to-one correspondence to the "modified WSDL," which, as discussed above, does not correspond to a web service *category*. Accordingly, Appellants submit that Atwal does not disclose or suggest the recitations of Claim 3 and, for at least these reasons, Appellants submit that Claim 3 is separately patentable.

D. Claims 4, 12 and 19 are separately patentable

Claim 4, which also stands rejected as allegedly anticipated by Atwal (see Final Action, p. 7), recites "identifying a plurality of ports operative to provide web services meeting the service category definition at the web service hub." In rejecting Claim 4, the Final Action cites paragraphs [0059] and [0061], which describe how a call to a specific web service is routed by reference to a web service repository. Final Action, p. 7. There is no disclosure or suggestion in Atwal that this repository identifies ports according to a *service category definition*. Accordingly, Appellants submit that Atwal does not disclose or suggest the recitations of Claim 4 and, for at least these reasons, Appellants submit that Claim 4 is separately patentable. At least similar reasons support the separate patentability of Claims 12 and 19.

E. Claims 9, 16 and 22 are separately patentable

Claim 9, which stands rejected as allegedly anticipated by Atwal (see Final Action, p. 7), recites "wherein creating an electronic record of a contract comprises creating an electronic record of a first contract, wherein the method further comprises creating an electronic record of a second contract to provide web services that meet a service level criterion to the service requestor at the web services hub, and wherein providing a web service to the service requestor comprises providing the web service to the service requestor

via the web services hub responsive to the electronic records of the first and second contracts." The Final Action alleges that the recited "second contract to provide web services that meet a service level criterion" is the "modified WSDL" discussed above. *See* Final Action, p. 7.

This allegation is inconsistent with the Final Action's assertions regarding Claim 1, in which the "modified WSDL" is alleged to correspond to the "first contract," i.e., "a contract for a service provider to provide web services meeting a web service category definition at a web services hub of a service domain." Moreover, there appears to be nothing in Atwal that discloses or suggests that this "modified WSDL" is generated based on a "service level criterion."

In the "Response to Arguments," the Final Action again cites paragraph [0007] as allegedly teaching "a need for a service level criterion" and cites FIG. 17 of Atwal as illustrating service categories in the form of Web services "A", "B", "C" and "D." Final Action, p. 3. As discussed above, this portion of Atwal describes a need for "a way to dynamically aggregate web services 25 based on a user's identity or some other criteria," but there is nothing here above a *service level* criterion. As discussed above, the Web service providers "A", "B", "C" and "D" are not categories.

Accordingly, Appellants submit that Atwal does not disclose or suggest the recitations of Claim 9 and, for at least these reasons, Appellants submit that Claim 9 is separately patentable. At least similar reasons support the separate patentability of Claims 16 and 22.

F. Claims 10, 17 and 23 are separately patentable

Claim 10, which stands rejected as allegedly anticipated by Atwal (see Final Action, pp. 7 and 8), recites "wherein providing a web service to the service requestor comprises dispatching a service request from the service requestor in the service domain based on the electronic records of the first and second contracts and a service policy of the web services hub." The Final Action asserts that authentication and billing functions performed by the gateway correspond to the recited "service policy." Final Action, p. 8. However, as explained in the present application at page 9, a "service policy" is a mapping of service level definitions for providers to service level definitions for users, and the authentication and

billing functions described in the cited paragraphs [0086]-[0090] do not appear to perform such service level mapping.

Accordingly, Appellants submit that Atwal does not disclose or suggest the recitations of Claim 10 and, for at least these reasons, Appellants submit that Claim 10 is separately patentable. At least similar reasons support the separate patentability of Claims 17 and 23.

III. Claims 5-8, 13-15, 20 and 21 are patentable

Appellants submit that Claims 5-8, 13-15, 20 and 21 are patentable at least by virtue of the patentability of the respective ones of independent Claims 1, 11 and 18 from which they dependent. Appellants further submit that several of these claims are separately patentable for at least the reasons discussed below.

A. Claims 5, 13 and 20 are separately patentable

Claim 5, which stands rejected as allegedly obvious with respect to a combination of Atwal and Hickman (see Final Action, p. 7), recites:

... wherein identifying a plurality of ports comprises:
polling at least one web services node subordinate to the web services hub to
identify at least one service provided by the node; and
updating *a description of a service category* responsive to the polling.

In rejecting Claim 5, the Final Action cites paragraph [0083] of Atwal, which describes operations for updating the web service repository of the gateway module. *See* Final Action, p. 9. The Final Action concedes that Atwal does not teach the recited polling of a subordinate web services node or the recited updating of a service category description response to the polling, but asserts that the abstract of Hickman provides the missing teachings by describing querying of a UDDI registry that contains a list of web services and identifying a desired web service and downloading a description of the desired web service. *See* Final Action, p. 9. The Final Action asserts combining this with the web service repository described in Atwal would produce the recitations of Claim 5, and that such a combination would be obvious "in order to allow the gateway to automatically discover web services." Final Action, p. 10.

As discussed above, the web service repository described in Atwal is not organized according to web service category definitions and, instead, merely provides a mapping from a

web service identifier to a network location. Adding Hickman to Atwal as proposed in the Final Action could, conceivably, allow the gateway module of Atwal to query a UDDI registry as described in Hickman to add web services to the gateway module's web service repository, but this does not teach or suggest updating *a description of a service category* responsive to querying of the UDDI registry described in Hickman. Moreover, the UDDI registry described in Hickman does not appear to be a "web services node subordinate to a web services hub," as web services hubs are not described in Hickman.

Accordingly, Appellants submit that the cited combination of Atwal and Hickman does not disclose or suggest the recitations of Claim 5 and, for at least these reasons, Appellants submit that Claim 5 is separately patentable. At least similar reasons support the separate patentability of Claims 13 and 20.

B. Claims 7 and 15 are separately patentable

Claim 7, which also stands rejected as allegedly obvious based on Atwal and Hickman (see Final Action, p. 10), recites "wherein polling at least one web services node comprises polling a plurality of levels of web services nodes using a coordinated polling interval scheme." The Final Action cites servers 13 shown in FIG. 2 and paragraph [0021] of Hickman as allegedly showing "polling of a plurality of levels of web services nodes." Final Action, p. 10. This material does not show "levels of web services." Rather, FIG. 2 and paragraph [0021] merely describe that web services at servers 13 may be accessed by a device 1 over a network 3 using identification information from a UDDI service 10. There appears to be nothing in this material regarding a "coordinated polling interval scheme."

Accordingly, Appellants submit that the cited combination of Atwal and Hickman does not disclose or suggest the recitations of Claim 7 and, for at least these reasons, Appellants submit that Claim 7 is separately patentable. At least similar reasons support the separate patentability of Claim 15.

C. Claim 8 is separately patentable

Claim 8, which also stands rejected as allegedly obvious based on Atwal and Hickman (see Final Action, pp. 10 and 11), recites "wherein polling a plurality of levels of web services nodes using a coordinated polling interval scheme comprises using staggered

polling intervals for adjacent levels of the web services domain." The Final Action alleges that such recitations are taught by paragraph [0010] and Claim 2 of Hickman. Final Action, p. 11. Paragraph [0010] says nothing about staggered polling intervals for adjacent levels of a web services domain. The "periodic querying" described in this passage is merely periodic querying of a UDDI registry, and has nothing to do with the cited relationship (i.e., "staggered") between polling intervals for different levels of web services. Claim 2 merely says that a UDDI querying method recited in Claim 1 of Hickman may be done without user interaction, which also does not disclose or suggest anything about staggered polling intervals for adjacent levels of a web services domain.

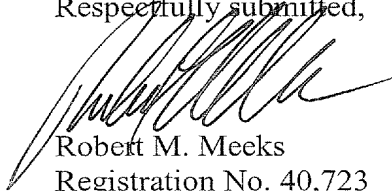
Accordingly, Appellants submit that the cited combination of Atwal and Hickman does not disclose or suggest the recitations of Claim 8 and, for at least these reasons, Appellants submit that Claim 8 is separately patentable.

VI. Conclusion

In light of the above discussion, Appellants submit that the pending claims are directed to patentable subject matter and, therefore, request reversal of the rejections of those claims and passing of the application to issue.

It is not believed that an extension of time and/or additional fee(s) are required, beyond those that may otherwise be provided for in documents accompanying this paper. In the event, however, that an extension of time is necessary to allow consideration of this paper, such an extension is hereby petitioned for under 37 C.F.R. §1.136(a). Any additional fees believed to be due in connection with this paper may be charged to Deposit Account No. 50-0220.

Respectfully submitted,



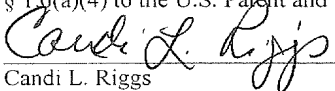
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APPENDIX A

Pending Claims USSN Serial No. 10/608,268

Filed June 27, 2003

1. (Original) A method of providing web services, the method comprising:
creating an electronic record of a contract for a service provider to provide web services meeting a web service category definition at a web services hub of a service domain;
and
providing a web service to a service requestor from the service domain responsive to the electronic record of the contract.
2. (Original) A method according to Claim 1, wherein providing a web service to the service requestor comprises providing the service to the service requestor without requiring the service requestor to discover a service instance that provides the service.
3. (Original) A method according to Claim 2, wherein providing the service to the service requestor comprises providing the service to the service requestor without requiring creation of a contract for the use of a specific service instance.
4. (Original) A method according to Claim 1, wherein providing a web service comprises:
identifying a plurality of ports operative to provide web services meeting the service category definition at the web service hub; and
providing the web service to the service requestor responsive to identification of the ports.
5. (Original) A method according to Claim 4, wherein identifying a plurality of ports comprises:
polling at least one web services node subordinate to the web services hub to identify at least one service provided by the node; and
updating a description of a service category responsive to the polling.

6. (Original) A method according to Claim 5, wherein polling at least one web services node comprises examining a WSDL (Web Service Description Language) description maintained at a subordinate web services node.

7. (Original) A method according to Claim 5, wherein polling at least one web services node comprises polling a plurality of levels of web services nodes using a coordinated polling interval scheme.

8. (Original) A method according to Claim 7, wherein polling a plurality of levels of web services nodes using a coordinated polling interval scheme comprises using staggered polling intervals for adjacent levels of the web services domain.

9. (Original) A method according to Claim 1, wherein creating an electronic record of a contract comprises creating an electronic record of a first contract, wherein the method further comprises creating an electronic record of a second contract to provide web services that meet a service level criterion to the service requestor at the web services hub, and wherein providing a web service to the service requestor comprises providing the web service to the service requestor via the web services hub responsive to the electronic records of the first and second contracts.

10. (Original) A method according to Claim 9, wherein providing a web service to the service requestor comprises dispatching a service request from the service requestor in the service domain based on the electronic records of the first and second contracts and a service policy of the web services hub.

11. (Original) A computing system, comprising:
a web services hub that creates an electronic record of a contract for a service provider to provide web services meeting a web service category definition and provides a web service to a service requestor from a service domain responsive to the electronic record of the contract.

12. (Original) A system according to Claim 11, wherein the web service hub is operative to identify a plurality of ports operative to provide web services meeting the service category definition at the web service hub and to provide the web service to the service requestor responsive to identification of the ports.

13. (Previously Presented) A system according to Claim 12, wherein the web service hub is operative to poll at least one web services node subordinate to the web services hub to identify at least one service provided by the node and to update a description of a service category responsive to the polling.

14. (Original) A system according to Claim 13, wherein the web service hub is operative to examine a WSDL description maintained at a subordinate web services node.

15. (Original) A system according to Claim 14, further comprising a web services domain comprising the web services hub and configured to poll a plurality of levels of web services nodes of the domain using a coordinated polling interval scheme.

16. (Original) A system according to Claim 11, wherein the electronic record of a contract comprises an electronic record of a first contract, and wherein the web services hub is further operative to create an electronic record of a second contract to provide web services that meet a service level criterion to the service requestor at the web services hub and to provide the web service to the service requestor via the web services hub responsive to the electronic records of the first and second contracts.

17. (Original) A system according to Claim 16, wherein the web services hub is operative to process a service request from the service requestor at the web services hub based on the electronic records of the first and second contracts and a service policy of the web services hub.

18. (Original) A computer program product comprising computer program code embodied in computer-readable storage medium, the computer program code comprising:

program code configured to create an electronic record of a contract for a service provider to provide web services meeting a web service category definition at a web services hub of a service domain; and

program code configured to provide a web service to a service requestor from the service domain responsive to the electronic record of the contract.

19. (Original) A computer program product according to Claim 18, wherein the program code configured to provide a web service comprises:

program code configured to identify a plurality of ports operative to provide web services meeting the service category definition at the web service hub; and

program code configured to provide the web service to the service requestor responsive to identification of the ports.

20. (Original) A computer program product according to Claim 19, wherein the program code configured to identify a plurality of ports comprises:

program code configured to poll at least one web services node subordinate to the web services hub to identify at least one service provided by the node; and

program code configured to update a description of a service category responsive to the polling.

21. (Original) A computer program product according to Claim 20, wherein the program code configured to poll at least one web services node comprises program code configured to examine a WSDL description maintained at a subordinate web services node.

22. (Original) A computer program product according to Claim 18, wherein the program code configured to create an electronic record of a contract comprises program code configured to create an electronic record of a first contract, wherein the computer program code further comprises program code configured to create an electronic record of a second contract to provide web services that meet a service level criterion to the service requestor at the web services hub, and wherein the program code configured to provide a web service to the service requestor comprises program code configured to provide the web service to the

service requestor via the web services hub responsive to the electronic records of the first and second contracts.

23. (Original) A computer program product according to Claim 22, wherein the program code configured to provide a web service to the service requestor comprises program code configured to dispatch a service request from the service requestor in the service domain based on the electronic records of the first and second contracts and a service policy of the web services hub.

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APPENDIX B – EVIDENCE APPENDIX
(NONE)

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APPENDIX C – RELATED PROCEEDINGS
(NONE)